FACT SHEET FOR NPDES PERMIT WA0020915
HOQUIAM WASTEWATER TREATMENT PLANT

TABLE OF CONTENTS

INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System (NPDES) of permits, which is administered by the Environmental Protection Agency (EPA). The EPA has authorized the state of Washington to administer the NPDES permit program. Chapter 90.48 Revised Code of Washington (RCW) defines the Department of Ecology's (Department) authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the state include procedures for issuing permits [Chapter 173-220 Washington Administrative Code (WAC)], technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see Appendix A--Public Involvement of the fact sheet for more detail on the Public Notice procedures).

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix D--Response to Comments.

GENERAL INFORMATION	
Applicant	City of Hoquiam
Facility Name and Address	Hoquiam Wastewater Treatment Plant West End of Moon Island Road Hoquiam, WA 98550
Type of Treatment	Oxidation Ditch
Discharge Location	Grays Harbor Estuary Latitude: 46° 58' 15" N Longitude: 123° 55' 16" W.
Water Body ID Number	New: 1224026474620 Old: WA-22-0030

The name of the water body is the Pacific Ocean. The discharge location is in the North Channel of Grays Harbor Estuary. The outfall is approximately 2 miles west of the confluence of the Hoquiam River with Grays Harbor. A map showing the water body and discharge location is presented in Figure 1.

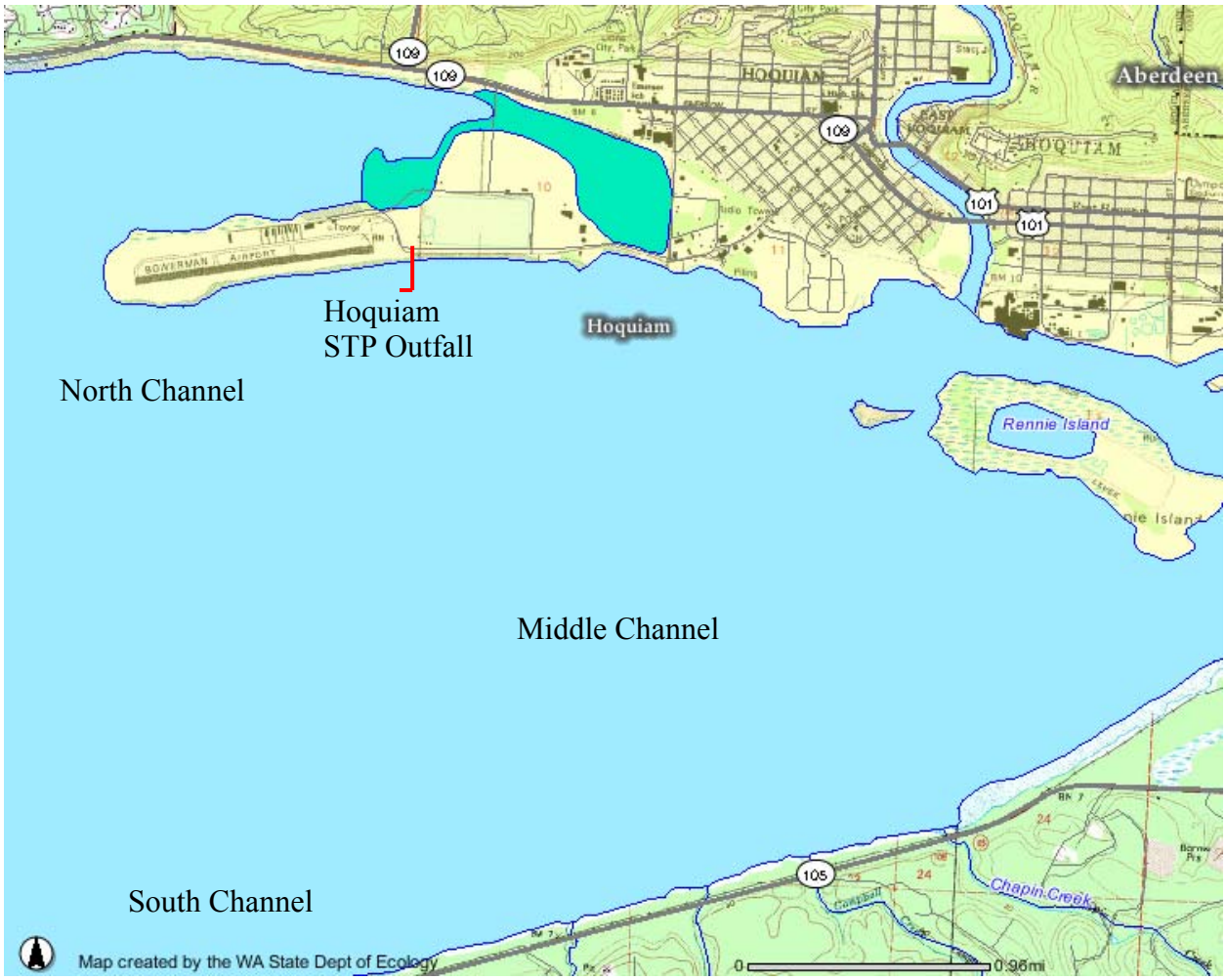

Figure 1. Map shows the water body and discharge location of the Hoquiam WWTP.

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

HISTORY

The existing activated sludge wastewater treatment plant (WWTP) was built in 1978 and the plant started up in April of 1980. Prior to construction of this facility, the City of Hoquiam (City) had a 48 acre facultative lagoon for treatment of domestic wastewater. The existing WWTP was constructed adjacent to this lagoon, which is now being used for storage and digestion of solids generated at the new facility. The lagoon is also used for raw wastewater storage in case of high influent flow, power outage at the facility, and during yearly and emergency maintenance. There has been no major upgrade or, modification since the new plant construction. The City is planning to install a dechlorination unit to comply with water quality based chlorine limit.

The Hoquiam WWTP is classified by EPA as a major discharger facility, because the plant design capacity exceeds 1.0 million gallons per day (MGD).

COLLECTION SYSTEM STATUS

The City converted old sanitary sewer system into stormwater system. The existing wastewater collection system consists of gravity and force main portions, which includes ten pump stations. Historically, the pump stations had bypass valves, which could divert wastewater to a storm drain system. These bypass valves shall be removed by November 30, 2006 per Order No. DE 01WQSR-3200. The City has eliminated 8 of the 9 overflow points including a major overflow point near K St pump station which was removed in December 2004. There is one more overflow point at Cottage Street pump station that needs to be removed.

A telemetry alarm system for the collection system was installed in 2001. It is connected to the Supervisory Control and Data Acquisition (SCADA) system that provides audible alarm at the plant building and pump station for any malfunction. The pump stations are equipped with backup generators that are automatically activated during power failures.

The treatment plant receives high flows during the periods of rainfall (Figure 2). The flows are normally contained within the plant treatment processes. Although the plant is designed for a wet weather peak flow of 8 MGD, the oxidation ditch aerator brushes become too submerged and the motors overload at flows beyond 6.5 MGD. Flows exceeding 6.5 MGD are bypassed to lagoon from the headworks through a weir structure until the influent flow subsides. The lagoon water is pumped back to the ditch for full treatment. The operator also diverts lagoon water to the head of the chlorine contact chamber during the periods of very high flows.

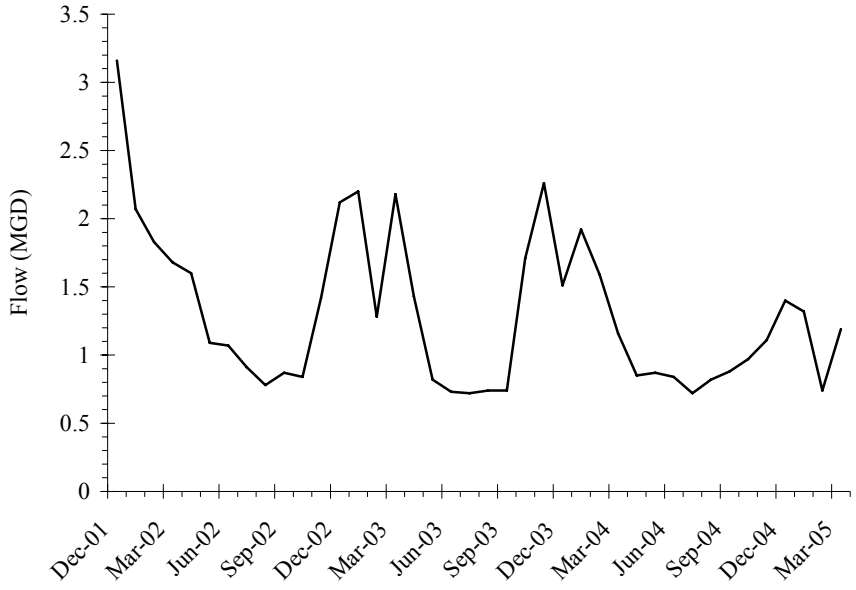

Figure 2. Effluent flow from December 2001 to March 2005 at the Hoquiam wastewater treatment plant

At present, it is difficult to assess the amount of flow bypassed to the lagoon because there is no influent flow meter at the headworks. The City will need to install an influent flow meter to assess the amount of flow bypassed to the lagoon. The inflow meter will also help to better estimate the quantity of infiltration and inflow (I/I) of the collection system.

There has been very little I/I reduction work during the previous permit cycle. No smoke testing or video camera inspection was done in this period. The City acquired five used Marsh-McBirney Flo-Totes to measure flow in manholes. Data from these units can be used to identify potential sources of excessive I/I in the collection system.

TREATMENT PROCESSES

The treatment plant has an extended aeration activated sludge system (oxidation ditch) to treat the wastewater. A schematic of the treatment plant is shown in Figure 3. The layout is described below:

- Headworks – Parkson Hycor Helisieve fine screen (0.25-inch holes, capacity 5 MGD), emergency manually cleaned coarse bar screen used during high flows and power failures, by-pass channel to the lagoon.

- Oxidation ditch – 3.0 million gallons, six rotating brush aerators (two 40 hp motors and two 70 hp motors), 18 hour detention time at 4 MGD

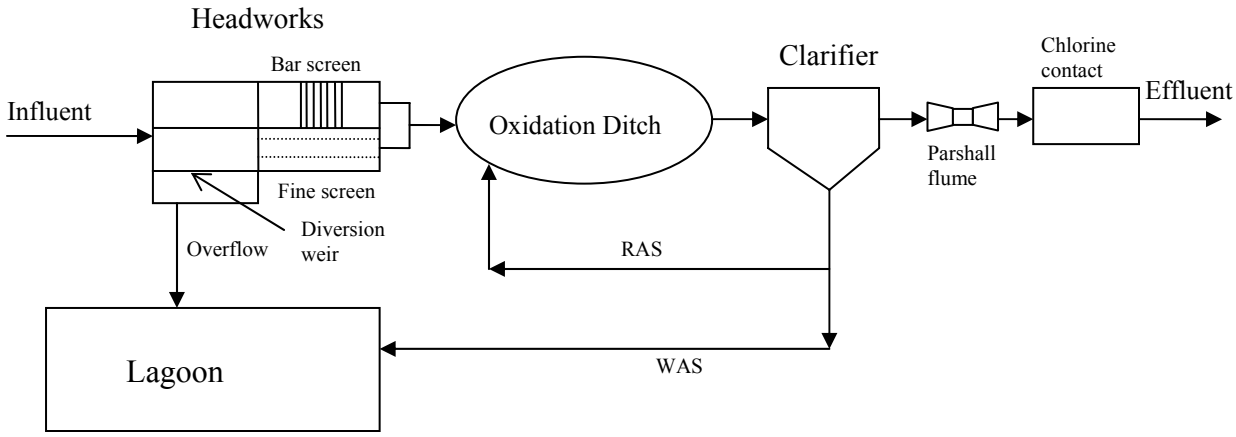

Figure 3. Treatment process schematic of Hoquiam wastewater treatment plant

- Solids removal by secondary clarifier (100 feet diameter, 15 feet deep), 5.4 hour detention time at 4 MGD

- Effluent flow measurement after secondary clarifier with 12″ Parshall flume

- Disinfection with two chlorinators and two chlorine contact tanks (detention time 60 minutes at 4 MGD)

- Control building for laboratory, personnel, and maintenance

- Pump building (two 7.5 hp waste activated sludge pumps, two 10 hp lagoon water pumps, and two 25 hp return activated sludge pumps)

Currently the treatment plant receives landfill leachate but it does not receive any process wastewater from any industry. Recently a fish meal production industry (considered to be a significant industrial user, SIU) has proposed to discharge its process wastewater into the City's collection system. The City needs to provide a detailed report to the Department on the treat ability of the process wastewater per the pretreatment regulations before accepting the wastewater. In the event of any other proposed industrial discharger, the City will follow the pretreatment regulations in the permit. The plant is classified as a "Class II" category and would require an operator certified at least at the Group II level to be in responsible charge of the facility. The plant is staffed by two full-time operators and one part-time maintenance worker. The day time operating hours are 8:00 a.m., to 4:30 p.m., Mondays through Fridays. Operators also work a four hour shift on weekends and holidays.

The City is currently under an administrative Order (Order No. DE 01WQSR-3200) from the Department to comply with the water quality based effluent limitation for chlorine. The City is required to meet the final maximum chlorine limit of 0.17 mg/L by November 30, 2006. The City has submitted an engineering report for upgrade to UV disinfection in June 2004. The Department has approved the engineering report for construction. Recently the City has changed their plan and decided to install a dechlorination unit to comply with the chlorine limit.

DISCHARGE OUTFALL

Secondary treated and disinfected effluent is discharged from the facility via 30-inch diameter buried concrete cylinder outfall pipe that extends approximately 800 feet offshore from the chlorine contact tank. The 128 feet long outfall diffuser is attached perpendicular to the end of the outfall pipe and has 12, 4-inch diameter ports. The diffuser discharges at a depth of about 24 feet below mean lower low water (MLLW) into the North Channel of Grays Harbor. The outfall diffuser is aligned parallel to the North Channel and is located approximately 350 feet inshore from the centerline of the navigation channel.

RESIDUAL SOLIDS

The treatment facilities remove solids during the treatment of the wastewater at the headworks (grit and screenings), and at the secondary clarifiers, in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Grit, rags, scum and screenings are drained and disposed of as solid waste at the local transfer station. Solids removed from the secondary clarifier are disposed of in the lagoon. The City has been monitoring the sludge for priority pollutant metals quarterly and priority pollutant organics and other toxics annually. Priority pollutant metals are well below the ceiling concentration limits for biosolids as per Chapter 173-308 WAC. Other pollutants are mostly below detection limits or not of significant concern.

Currently the facility does not have a sludge management plan. The sludge generated by the treatment processes is stored in the 48 acre lagoon. The lagoon has not been cleaned since the startup of the plant. The lagoon is losing capacity due to build up of solids. This permit will require the City to submit a residual solids management plan.

The Department has issued a new statewide general permit for biosolids management on May 4, 2005, which became effective from June 5, 2005. The City is required to apply for the coverage of this permit.

PERMIT STATUS

The previous permit for this facility was issued on November 28, 2001. The previous permit placed effluent limitations on 5-day Biochemical Oxygen Demand (BOD_5), Total Suspended Solids (TSS), pH, Fecal Coliform bacteria, and Total Residual Chlorine. The limits were as follows:

	EFFLUENT LIMITATIONS[a]: OUTFALL # 001	
Parameter	**Average Monthly**	**Average Weekly**
Biochemical Oxygen Demand[b] (5 day)	30 mg/L, 699 lbs/day	45 mg/L, 1049 lbs/day
Total Suspended Solids[b]	30 mg/L, 489 lbs/day	45 mg/L, 734 lbs/day
Fecal Coliform Bacteria	200 Colonies /100 mL	400 Colonies /100 mL
pH[c]	Daily minimum is equal to or greater than 6 and the daily maximum is less than or equal to 9 Standard Units.	
Parameter	**Interim Maximum Daily[d]**	**Final Maximum Daily[d]**
Total Residual Chlorine	0.5 mg/L	0.17 mg/L (*See note below)
[a]The average monthly and weekly effluent limitations are based on the arithmetic mean of the samples taken with the exception of fecal coliform, which is based on the geometric mean.		
[b]The average monthly effluent concentration for BOD5 and Total Suspended Solids shall not exceed 30 mg/L or 15 percent of the respective monthly average influent concentrations, whichever is more stringent.		
[c]Indicates the range of permitted values. When pH is continuously monitored, excursions between 5.0 and 6.0, or 9.0 and 10.0 shall not be considered violations provided no single excursion exceeds 60 minutes in length and total excursions do not exceed 7 hours and 30 minutes per month. Any excursions below 5.0 and above 10.0 are violations. The instantaneous maximum and minimum pH shall be reported monthly.		
[d]The maximum daily effluent limitation is defined as the highest allowable daily discharge. The daily discharge means the discharge of a pollutant measured during a calendar day. For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For other units of measurement, the daily discharge is the average measurement of the pollutant over the day.		
[*]The final chlorine limit shall go into effect upon completion of disinfection modifications described in Order No. DE 01 WQSR-3200.		

An application for permit renewal was submitted to the Department on October 11, 2004. Following initial review, the completed revised application was resubmitted on April 4, 2005, and accepted by the Department on May 20, 2005.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility received its last inspection on April 19, 2005.

During the history of the previous permit, the Permittee has remained in compliance, based on Discharge Monitoring Reports (DMRs) submitted to the Department and inspections conducted by the Department. The facility received all-star compliance award from the Department for the year 2004.

WASTEWATER CHARACTERIZATION

The concentration of pollutants in the discharge was reported in the NPDES application and in discharge monitoring reports. The effluent is characterized as follows:

Table 1: Wastewater Characterization

Parameter	Concentration
Flow	1.09 MGD
BOD_5	3 mg/L
TSS	7 mg/L
pH	6.01 – 7.2 standard units
Fecal Coliform	11 Colonies/100 mL
Total Residual Chlorine	0.28 mg/L
Temperature (Winter)	11.7 ºC
Temperature (Summer)	17.8 ºC
Ammonia (as N)	0.04 mg/L
Dissolved Oxygen	5.4 mg/L
Total Kjeldahl Nitrogen (TKN)	1.07 mg/L
Oil and Grease	Below Detection Limit
Total Phosphorus	1.4
Total Dissolved Solids	1109 mg/L
Arsenic	0.84 µg/L
Antimony	0.34 µg/L
Lead	0.11 µg/L
Selenium	1.57 µg/L
Copper	9.92 µg/L
Zinc	48.04 µg/L
Total Phenols	63.33 µg/L
bis(2-Ethylhexyl)phthalate	0.23 µg/L
Chloroform	0.50 µg/L
Bromodichloromethane	0.57 µg/L
Cyanide	Below Detection Limit

The effluent was monitored quarterly for priority pollutant metals and cyanide and annually for priority pollutant organics and other toxic pollutants during the previous permit cycle. Most of the priority pollutants were below detection limit. Other pollutants above the detection limit were found to comply with the marine water quality standards. The method for analyzing Cu (by ICP) had a quantification level of 10 µg/L which is not precise enough to determine the reasonable potential. Cu shall be monitored more precisely as it has a stringent marine water quality standard. During the previous permit cycle, total residual chlorine (0.28 mg/L) was violating the water quality standards. The permittee has until 11/30/06 to comply with the final daily maximum chlorine limit (0.17 mg/L) as described in the administrative Order No. DE 01 WQSR-3200.

SEPA COMPLIANCE

There are no State Environmental Policy Act (SEPA) compliance issues currently pending.

PROPOSED PERMIT LIMITATIONS

Federal and state regulations require that effluent limitations set forth in a NPDES permit must be either technology- or water quality-based. Technology-based limitations for municipal discharges are set by

regulation (40 CFR 133, and Chapters 173-220 and 173-221 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992.) The most stringent of these types of limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The limits in this permit are based in part on information received in the application. The effluent constituents in the application were evaluated on a technology- and water quality-basis. The limits necessary to meet the rules and regulations of the state of Washington were determined and included in this permit. The Department does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent**.** Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation**.** Effluent limits are not always developed for pollutants that may be in the discharge but not reported as present in the application. In those circumstances the permit does not authorize discharge of the non-reported pollutants. Effluent discharge conditions may change from the conditions reported in the permit application. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department. The Permittee may be in violation of the permit until the permit is modified to reflect additional discharge of pollutants.

DESIGN CRITERIA

In accordance with WAC 173-220-150 (1)(g), flows or waste loadings shall not exceed approved design criteria.

The design criteria for this treatment facility are taken from the plans of wastewater facilities improvement project prepared by Kramer, Chin & Mayo, Inc. (currently known as Tetra Tech/KCM) and are as follows:

Table 2: Design Standards for the City of Hoquiam WWTP.

Parameter	Design Quantity
Monthly average flow (max. month)	4.00 MGD
Monthly average dry weather flow	3.00 MGD
Monthly average wet weather flow	4.00 MGD
Instantaneous peak flow	8.00 MGD
Annual average flow	3.30 MGD
BOD_5 influent loading	4,660 lbs/day
TSS influent loading	3,260 lbs/day
Design population equivalent	13,300

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Municipal wastewater treatment plants are a category of discharger for which technology-based effluent limits have been promulgated by federal and state regulations. These effluent limitations are given in the Code of Federal Regulations (CFR) 40 CFR Part 133 (federal) and in Chapter 173-221 WAC (state). These regulations are performance standards that constitute all known available and reasonable methods of prevention, control, and treatment for municipal wastewater.

The following technology-based limits for pH, fecal coliform, BOD_5, and TSS are taken from Chapter 173-221 WAC are:

Table 3: Technology-based Limits.

Parameter	Limit
pH:	shall be within the range of 6 to 9 standard units.
Fecal Coliform Bacteria	Monthly Geometric Mean = 200 organisms/100 mL Weekly Geometric Mean = 400 organisms/100 mL
BOD_5 (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
TSS (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L Average Monthly Limit = 0.5 mg/L Average Weekly Limit = 0.75 mg/L

The technology-based monthly average limitation for chlorine is derived from standard operating practices. The Water Pollution Control Federation's Chlorination of Wastewater (1976) states that a properly designed and maintained wastewater treatment plant can achieve adequate disinfection if a 0.5 mg/liter chlorine residual is maintained after fifteen minutes of contact time. See also Metcalf and Eddy, Wastewater Engineering, Treatment, Disposal and Reuse, Third Edition, 1991. A treatment plant that provides adequate chlorination contact time can meet the 0.5 mg/liter chlorine limit on a monthly average basis. According to WAC 173-221-030(11)(b), the corresponding weekly average is 0.75 mg/liter.

The existing permit has a chlorine limit of 0.5 mg/L Maximum Daily limit and the facility is able to comply with it. The proposed permit includes the same limit as an interim chlorine limit. A final daily maximum chlorine (Total Residual) limit of 0.17 mg/L is included in this permit to be complied with by November 30, 2006, upon completion of the system modifications described in Order No. DE 01 WQSR-3200.

The following technology-based mass limits are based on WAC 173-220-130(3)(b) and 173-221-030(11)(b).

Monthly effluent mass loadings for BOD5 (lbs/day) were calculated as the maximum monthly influent design loading (4,660 lbs/day) x 0.15 = 699 lbs/day.

The weekly average effluent mass loading for BOD5 is calculated as 1.5 x monthly loading = 1,049 lbs/day.

Monthly effluent mass loadings for TSS (lbs/day) were calculated as the maximum monthly influent design loading (3,260 lbs/day) x 0.15 = 489 lbs/day.

The weekly average effluent mass loading for TSS is calculated as 1.5 x monthly loading = 734 lbs/day.

SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily loading study (TMDL).

NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE

"Numerical" water quality criteria are numerical values set forth in the State of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in a receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH

The state was issued 91 numeric water quality criteria for the protection of human health by the U.S. EPA (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

NARRATIVE CRITERIA

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the state of Washington.

ANTIDEGRADATION

The state of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when receiving waters are of higher quality than the criteria assigned, the existing water quality shall be protected. More information on the State Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

The Department has reviewed existing records and is unable to determine if ambient water quality is either higher or lower than the designated classification criteria given in Chapter 173-201A WAC; therefore, the Department will use the designated classification criteria for this water body in the proposed permit. The discharges authorized by this proposed permit should not cause a loss of beneficial uses.

CRITICAL CONDITIONS

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

MIXING ZONES

The Water Quality Standards allow the Department to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention, control and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-100.

The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria.

DESCRIPTION OF THE RECEIVING WATER

The facility discharges to North Channel of Grays Harbor Estuary which is designated as a Class B receiving water in the vicinity of the outfall. Other nearby point source outfalls include the City of Aberdeen Wastewater Treatment Plant, Grays Harbor Paper, and Weyerhaeuser Company Cosmopolis Pulp Mill. Significant nearby non-point sources of pollutants include typical natural and urban runoff sources. Characteristic uses include the following: water supply (industrial, agricultural); stock watering; fish migration; fish and shellfish rearing, spawning and harvesting; wildlife habitat; secondary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation.

Water quality of this class shall meet or exceed the requirements for most uses.

SURFACE WATER QUALITY CRITERIA

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Criteria for this discharge are summarized below:

Fecal Coliforms	100 organisms/100 mL maximum geometric mean
Dissolved Oxygen	5 mg/L minimum
Temperature	19 degrees Celsius maximum or incremental increases above background
pH	7.0 to 8.5 standard units
Turbidity	less than 10 NTUs above background
Toxics	No toxics in toxic amounts (see Appendix C for numeric criteria for toxics of concern for this discharge)

Grays Harbor is listed for fecal coliforms in 303(d) list. A TMDL for fecal coliforms was approved on May 9, 2003. However, it did not impact the fecal coliform limit for the Hoquiam WWTP.

CONSIDERATION OF SURFACE WATER QUALITY-BASED LIMITS FOR NUMERIC CRITERIA

Pollutant concentrations in the proposed discharge exceed water quality criteria with technology-based controls which the Department has determined to be AKART. A mixing zone is authorized in accordance with the geometric configuration, flow restriction, and other restrictions for mixing zones in Chapter 173-201A WAC and are defined as follows:

The dilution factors of effluent to receiving water that occur within these zones have been determined at the critical condition by the use of the model UDKHDEN. The model results can be found in the Effluent Mixing Study Report performed by CH2M HILL in July 1997. The dilution factors have been determined to be:

	Acute	Chronic
Aquatic Life	13:1	21:1
Human Health, Carcinogen		21:1
Human Health, Non-carcinogen		21:1

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants--their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as BOD is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

The derivation of water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the receiving water.

The critical condition for the North Channel of the Grays Harbor is during the times of lowest current speeds and maximum density stratification. For a tidally-influenced system, slack water closest to low tide typically will be the most critical time for the combined effects of current and depth. Density stratification affects the mixing since it determines whether the effluent plume becomes trapped or surfaces. Conditions of stratified ambient density are typically observed in the late spring and summer when surface waters are warmer and freshwater input is higher at the beginning. Due to complexity in determining critical condition in Grays Harbor, 24 different combinations of ambient and effluent conditions have been used in mixing zone study conducted by CH2M HILL. Critical condition occurs during the wet season (November to March) at slack tide and during the dry season (June to September) at flood and ebb tide. The ambient data were taken from several sources including the Department Station GYS-009 and field data collection as reported in the study. The ambient background data used for the mixing zone study includes the following:

Parameter	Value used
Wet season current speed at slack tide	3.0 cm/s

Wet season discharge depth	24.0 feet
Wet season temperature during low slack	8.8 ºC
Wet season density	Varies from surface to bottom (1.0112 – 1.0194 gm/cm^3)
Wet season salinity	23 ppt profile average
Dry season current speed at flood and ebb tide	42.9 cm/s
Dry season discharge depth	29.4 feet
Dry season temperature at flood tide	18 ºC profile average
Dry season density	Varies from surface to bottom (1.0100 – 1.0170 gm/cm^3)
Dry season salinity at flood tide	21 ppt profile average
Distance to shore at MLLW	≈ 200 feet
Fecal Coliform	12 colonies/100 mL
Conductivity	13.1-25.9 mS/cm dry weather

BOD_5--This discharge with technology-based limitations results in a small amount of BOD loading relative to the large amount of dilution occurring in the receiving water at critical conditions. Technology-based limitations will be protective of dissolved oxygen criteria in the receiving water.

Temperature--The impact of the discharge on the temperature of the receiving water was modeled by simple mixing analysis at critical condition. The receiving water temperature at the critical condition is 17.08 ºC and the effluent temperature is 18.9 ºC. The predicted resultant temperature at the boundary of the chronic mixing zone is 17.17 ºC and the incremental rise is 0.09 ºC.

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters. Therefore, no effluent limitation for temperature was placed in the proposed permit.

pH--Because of the high buffering capacity of marine water, compliance with the technology-based limits of 6 to 9 will assure compliance with the Water Quality Standards for Surface Waters.

Fecal coliform--The numbers of fecal coliform were modeled by simple mixing analysis using the technology-based limit of 400 organisms per 100 ml and a dilution factor of 21.

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters with the technology-based limit. Therefore, the technology-based effluent limitation for fecal coliform bacteria was placed in the proposed permit.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. This process occurs concurrently with the

derivation of technology-based effluent limits. Facilities with technology-based effluent limits defined in regulation are not exempted from meeting the Water Quality Standards for Surface Waters or from having surface water quality-based effluent limits.

The following toxics were determined to be present in the discharge: chlorine, and heavy metals. A reasonable potential analysis (See Appendix C) was conducted on these parameters to determine whether or not effluent limitations would be required in this permit.

The determination of the reasonable potential for heavy metals to exceed the water quality criteria was evaluated with procedures given in EPA, 1991 (Appendix C) at the critical condition. The parameters used in the critical condition modeling are as follows: acute dilution factor 13, chronic dilution factor 21.

No valid ambient background data was available for heavy metals. A determination of reasonable potential using zero for background resulted in no reasonable potential.

Water quality criteria for metals in Chapter 173-201A WAC are based on the dissolved fraction of the metal.

The Permittee may provide data clearly demonstrating the seasonal partitioning of the dissolved metal in the ambient water in relation to an effluent discharge. Metals criteria may be adjusted on a site-specific basis when data is available clearly demonstrating the seasonal partitioning in the ambient water in relation to an effluent discharge.

Metals criteria may also be adjusted using the water effects ratio approach established by USEPA, as generally guided by the procedures in USEPA Water Quality Standards Handbook, December 1983, as supplemented or replaced.

The determination of the reasonable potential for chlorine to exceed the water quality criteria was evaluated with procedures given in EPA, 1991 (Appendix C) at the critical condition. The critical condition in this case occurs during wet season (November to March) at slack tide for acute criteria and during dry season (June to September) at flood and ebb tide for chronic criteria. The parameters used in the critical condition modeling are as follows: acute dilution factor 13, chronic dilution factor 21.

Effluent limits were derived for chlorine because of a reasonable potential to cause a violation of the Water Quality Standards. Effluent limits were calculated using methods from EPA, 1991 as shown in Appendix C.

The resultant effluent limits are as follows:

Chlorine: Daily Maximum Limit – 0.17 mg/L

Average Monthly Limit – 0.10 mg/L

The proposed permit contains a compliance schedule as described in Order No. DE 01 WQSR-3200 for meeting the water quality-based limits for chlorine.

The proposed permit contains interim limits for chlorine as required by Chapter 173-201A WAC. The limits are based on existing demonstrated performance.

WHOLE EFFLUENT TOXICITY

The Water Quality Standards for Surface Waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available

detection methods. However, toxicity can be measured directly by exposing living organisms to the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore this approach is called whole effluent toxicity (WET) testing.

Toxicity caused by unidentified pollutants is not expected in the effluent from this discharge as determined by the screening criteria given in Chapter 173-205 WAC. Therefore, no whole effluent toxicity testing is required in this permit. The Department may require effluent toxicity testing in the future if it receives information that toxicity may be present in this effluent.

HUMAN HEALTH

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the state by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992).

The Department has determined that the applicant's discharge is unlikely to contain chemicals regulated for human health. The discharge will be re-evaluated for impacts to human health at the next permit reissuance.

SEDIMENT QUALITY

The Department has promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that the Department may require Permittees to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

The Department has determined through a review of the discharger characteristics and effluent characteristics that this discharge has no reasonable potential to violate the Sediment Management Standards.

GROUND WATER QUALITY LIMITATIONS

The Department has promulgated Ground Water Quality Standards (Chapter 173-200 WAC) to protect uses of ground water. Permits issued by the Department shall be conditioned in such a manner so as not to allow violations of those standards (WAC 173-200-100).

This Permittee has no discharge to ground and therefore no limitations are required based on potential effects to ground water.

COMPARISON OF EFFLUENT LIMITS WITH THE EXISTING PERMIT ISSUED NOVEMBER 28, 2001

Parameter	Existing Limit (Monthly Average)	Proposed Limit (Monthly Average)
Biochemical Oxygen Demand (5 day)	30 mg/L, 699 lbs/day	30 mg/L, 699 lbs/day
Total Suspended Solids	30 mg/L, 489 lbs/day	30 mg/L, 489 lbs/day
Fecal Coliform	200 Colonies/ 100 mL	200 Colonies/ 100 mL

Parameter	Existing Limit (Monthly Average)	Proposed Limit (Monthly Average)
pH	Not outside the range of 6.0 – 9.0	Not outside the range of 6.0 – 9.0

Parameter	Existing/Interim Limit (Daily Maximum)	Proposed Limit	
		Monthly Average	Daily Maximum
Total Residual Chlorine	0.5 mg/L	0.10 mg/L	0.17 mg/L

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

Monitoring for influent flow is being required to determine the I/I and the amount of raw wastewater bypassed to the lagoon. This monitoring is needed to verify permit condition S4, which restricts the facility loading. In addition, it will help the City to adopt an effective I/I reduction program.

Monitoring of sludge quantity and quality is necessary to determine the appropriate uses of the sludge. Sludge monitoring is required by the current state and local solid waste management program and also by EPA under 40 CFR 503.

The monitoring schedule is detailed in the proposed permit under condition S2. Specified monitoring frequencies take into account the quantity and variability of discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is consistent with agency guidance given in the current version of the Department's *Permit Writer's Manual* (July 1994) for an activated sludge plant greater than or equal to 2 MGD, but less than or equal to 5 MGD.

The monitoring for conventional pollutants (BOD5, TSS, and Fecal Coliform) is reduced to 2/week instead of the recommended 3/week based on the good performance by the Permittee. These pollutants were consistently 75 – 90 percent below the effluent limit.

LAB ACCREDITATION

With the exception of certain parameters the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories.* The laboratory at this facility is accredited for BOD5, TSS, fecal coliform, pH, Temperature, and Total Residual Chlorine.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3 are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-220-210).

PREVENTION OF FACILITY OVERLOADING

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 require the Permittee to take the actions detailed in proposed permit requirement S4 to plan expansions or modifications before existing capacity is reached and to report and correct conditions that could result in new or increased discharges of pollutants. Condition S4 restricts the amount of flow.

OPERATION AND MAINTENANCE (O&M)

The proposed permit contains condition S5 as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

The proposed permit requires submission of updated O&M manual upon completion of the disinfection modifications as required by the Order No. DE 01 WQSR-3200.

RESIDUAL SOLIDS HANDLING

To prevent water quality problems the Permittee is required in permit condition S7 to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and state Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503, and by the Department under Chapter 70.95J RCW and Chapter 173-308 WAC. The disposal of other solid waste is under the jurisdiction of the Grays Harbor County Health Department.

The Permittee is required to submit a residual solids management plan. At present, the solids generated by the treatment processes are stored in the adjacent lagoon. The 48 acre lagoon has been receiving sludge since 1978 and has not been cleaned once. The holding capacity of the lagoon has decreased over time. The lagoon is not lined and has the potential to pollute the groundwater and surface water. It is necessary to clean up the lagoon. The Permittee shall submit a detail plan to the Department as required in permit condition S7.

PRETREATMENT

Federal and State Pretreatment Program Requirements

Under the terms of the addendum to the "Memorandum of Understanding between Washington Department of Ecology and the United States Environmental Protection Agency, Region 10" (1986), the Department has been delegated authority to administer the Pretreatment Program [i.e. act as the Approval Authority for oversight of delegated Publicly Owned Treatment Works (POTWs)]**.** Under this delegation of authority, the Department has exercised the option of issuing wastewater discharge permits for significant industrial users discharging to POTWs which have not been delegated authority to issue wastewater discharge permits.

There are a number of functions required by the Pretreatment Program which the Department is delegating to such POTWs because they are in a better position to implement the requirements (e.g. tracking the number and general nature of industrial dischargers to the sewerage system). The requirements for a Pretreatment Program are contained in Title 40, Part 403 of the Code of Federal Regulations. Under the requirements of the Pretreatment Program [40 CFR 403.8(f)(1)(iii)], the

Department is required to approve, condition, or deny new discharges or a significant increase in the discharge for existing significant industrial users (SIUs) [40 CFR 403.8 (f)(1)(i)].

The Department is responsible for issuing State Waste Discharge Permits to SIUs and other industrial users of the Permittee's sewer system. Industrial dischargers must obtain these permits from the Department prior to the Permittee accepting the discharge [WAC 173-216-110(5)]. (Industries discharging wastewater that is similar in character to domestic wastewater are not required to obtain a permit. Such dischargers should contact the Department to determine if a permit is required.) Industrial dischargers need to apply for a State Waste Discharge Permit 60 days prior to commencing discharge. The conditions contained in the permits will include any applicable conditions for categorical discharges, loading limitations included in contracts with the POTW, and other conditions necessary to assure compliance with state water quality standards and biosolids standards.

The Department requires this POTW to fulfill some of the functions required for the Pretreatment Program in the NPDES permit (e.g. tracking the number and general nature of industrial dischargers to the sewage system). The POTWs NPDES permit will require that all SIUs currently discharging to the POTW be identified and notified of the requirement to apply for a wastewater discharge permit from the Department. None of the obligations imposed on the POTW relieve an industrial or commercial discharger of its primary responsibility for obtaining a wastewater discharge permit (if required), including submittal of engineering reports prior to construction or modification of facilities [40 CFR 403.12(j) and WAC 173-216-070 and WAC 173-240-110, et seq.].

Wastewater Permit Required

RCW 90.48 and WAC 173-216-040 require SIUs to obtain a permit prior to discharge of industrial waste to the Permittee's sewerage system. This provision prohibits the POTW from accepting industrial wastewater from any such dischargers without authorization from the Department.

Requirements for Routine Identification and Reporting of Industrial Users

The NPDES permit requires non-delegated POTWs to "take continuous, routine measures to identify all existing, new, and proposed SIUs and potential significant industrial users (PSIUs) discharging to the Permittee's sewerage system." Examples of such routine measures include regular review of business tax licenses for existing businesses and review of water billing records and existing connection authorization records. System maintenance personnel can also be diligent during performance of their jobs in identifying and reporting as-yet unidentified industrial dischargers. Local newspapers, telephone directories, and word-of-mouth can also be important sources of information regarding new or existing discharges. The POTW is required to notify an industrial discharger, in writing, of their responsibilities regarding application for a state waste discharge permit and to send a copy of the written notification to the Department. The Department will then take steps to solicit a state waste discharge permit application.

Requirements for Performing an Industrial User Survey

This POTW has the potential to serve significant industrial or commercial users and is required to perform an Industrial User Survey. The goal of this survey is to develop a list of SIUs and PSIUs, and of equal importance, to provide sufficient information about industries which discharge to the POTW, to determine which of them require issuance of state waste discharge permits or other regulatory controls. An Industrial User Survey is an important part of the regulatory process used to prevent interference with treatment processes at the POTW and to prevent the exceedance of water quality standards. The Industrial User Survey also can be used to contribute to the maintenance of sludge quality, so that sludge can be a useful biosolids product rather than an expensive waste problem. An Industrial User Survey is a rigorous method for identifying existing, new, and proposed significant industrial users and potential

significant industrial users. A complete listing of methodologies is available in the Department guidance document entitled "Conducting an Industrial User Survey."

Support by the Department for Developing Partial Pretreatment Program by POTW

The Department has committed to providing technical and legal assistance to the Permittee in fulfilling these joint obligations, in particular assistance with developing an adequate sewer use ordinance, notification procedures, enforcement guidelines, and developing local limits and inspection procedures.

OUTFALL EVALUATION

Proposed permit condition S.9 requires the Permittee to conduct an outfall inspection and submit a report detailing the findings of that inspection. The purpose of the inspection is to determine the condition of the discharge pipe and diffusers and to determine if sediment is accumulating in the vicinity of the outfall.

GENERAL CONDITIONS

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual municipal NPDES permits issued by the Department.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

The Department may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards, Sediment Quality Standards, or Ground Water Standards, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended state or federal regulations.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to protect human health, aquatic life, and the beneficial uses of waters of the state of Washington. The Department proposes that this permit be issued for five years.

REFERENCES FOR TEXT AND APPENDICES

Environmental Protection Agency (EPA)

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.

1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington, D.C.

1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.

1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C.

Metcalf and Eddy.

1991. Wastewater Engineering, Treatment, Disposal, and Reuse. Third Edition.

Tsivoglou, E.C., and J.R. Wallace.

1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

Washington State Department of Ecology.

Laws and Regulations(http://www.ecy.wa.gov/laws-rules/index.html)

Permit and Wastewater Related Information
(http://www.ecy.wa.gov/programs/wq/wastewater/index.html

Washington State Department of Ecology.

1994. Permit Writer's Manual. Publication Number 92-109

Water Pollution Control Federation.

1976. Chlorination of Wastewater.

Wright, R.M., and A.J. McDonnell.

1979. In-stream Deoxygenation Rate Prediction. Journal Environmental Engineering Division, ASCE. 105(EE2). (Cited in EPA 1985 op.cit.)

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to issue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on May 16, 2004, and May 23, 2004, in the *Aberdeen Daily World* to inform the public that an application had been submitted and to invite comment on the issuance of this permit.

The Department will publish a Public Notice of Draft (PNOD) on September 26, 2005, in the *Aberdeen Daily World* to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Carey Cholski
Water Quality Permit Administrator
Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775.

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the 30-day comment period to the address above. The request for a hearing shall indicate the interest of the party and the reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least 30 days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within 30 days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (360) 407-6300, or by writing to the address listed above.

This permit and fact sheet were written by Mahbub Alam.

APPENDIX B--GLOSSARY

Acute Toxicity--The lethal effect of a pollutant on an organism that occurs within a short period of time, usually 48 to 96 hours.

AKART-- An acronym for "all known, available, and reasonable methods of prevention, control, and treatment".

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation --The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month (except in the case of fecal coliform). The daily discharge is calculated as the average measurement of the pollutant over the day.

Average Weekly Discharge Limitation -- The highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week. The daily discharge is calculated as the average measurement of the pollutant over the day.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD_5--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD_5 is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility.

CBOD5 – The quantity of oxygen utilized by a mixed population of microorganisms acting on the nutrients in the sample in an aerobic oxidation for five days at a controlled temperature of 20 degrees Celcius, with an inhibitory agent added to prevent the oxidation of nitrogen compounds. The method for determining CBOD5 is given in 40 CFR Part 136.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity--The effect of a pollutant on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Combined Sewer Overflow (CSO)--The event during which excess combined sewage flow caused by inflow is discharged from a combined sewer, rather than conveyed to the sewage treatment plant because either the capacity of the treatment plant or the combined sewer is exceeded.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing a minimum of four discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots).

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Continuous Monitoring –Uninterrupted, unless otherwise noted in the permit.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Dilution Factor--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial User-- A discharger of wastewater to the sanitary sewer which is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Infiltration and Inflow (I/I)--"Infiltration" means the addition of ground water into a sewer through joints, the sewer pipe material, cracks, and other defects. "Inflow" means the addition of precipitation-caused drainage from roof drains, yard drains, basement drains, street catch basins, etc., into a sewer.

Interference -- A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal and;

Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Major Facility--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

Minor Facility--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone--A volume that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in State regulations (Chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the State of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

Pass through -- A discharge which exits the POTW into waters of the State in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of State water quality standards.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Potential Significant Industrial User--A potential significant industrial user is defined as an Industrial User which does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

a. Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day or;

b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

The Department may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Significant Industrial User (SIU)--

1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;

2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

*The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, wetlands, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)--Total suspended solids are the particulate materials in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Upset--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit--A limit on the concentration or mass of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX C--TECHNICAL CALCULATIONS

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found on the Department's homepage at (http://www.ecy.wa.gov/programs/wq/wastewater/index.html

Spreadsheet C1: Determination of Reasonable Potential

				State Water Quality Standard		concentration at edge of...												
	Metal Criteria Translator as decimal	Metal Criteria Translator as decimal	Ambient Concentration (metals as dissolved)	Acute	Chronic	Acute Mixing Zone	Chronic Mixing Zone	**LIMIT REQ'D ?**	Effluent percentile value		Max effluent conc. measured (metals as total recoverable)	Coeff Variation		# of samples	Multiplier	Acute Dil'n Factor	Chronic Dil'n Factor
Parameter	Acute	Chronic	*ug/L*	*ug/L*	*ug/L*	*ug/L*	*ug/L*			*Pn*	*ug/L*	*CV*	*s*	*n*			
Cu	0.83	0.83		4.8000	3.1000	2.16	1.34	**NO**	0.95	0.779	15.80	1.06	0.87	12	2.14	13	21
Chlorine				13.0000	7.5000	38.85	24.05	**YES**	0.95	0.928	480.00	0.28	0.27	40	1.05	13	21

Spreadsheet C2: Effluent Limit for Chlorine

			Permit Limit Calculation Summary							**Waste Load Allocation (WLA) and Long Term Average (LTA) Calculations**							Statistical variables for permit limit calculation				
	Acute Dil'n Factor	Chronic Dil'n Factor	Metal Criteria Translator	Metal Criteria Translator	Ambient Concentration	Water Quality Standard Acute	Water Quality Standard Chronic	Average Monthly Limit (AML)	Maximum Daily Limit (MDL)	WLA Acute	WLA Chronic	LTA Acute	LTA Chronic	LTA Coeff. Var. (CV)	LTA Prob'y Basis	Limiting LTA	Coeff. Var. (CV)	AML Prob'y Basis	MDL Prob'y Basis	# of Samples per Month	
PARAMETER			Acute	Chronic	*ug/L*	*ug/L*	*ug/L*	ug/L	ug/L	*ug/L*	*ug/L*	*ug/L*	*ug/L*	*decimal*	*decimal*	*ug/L*	*decimal*	*decimal*	*decimal*	*n*	
Chlorine	13.0	21.00				13.0000	7.5000	**100.6**	**169.0**	169	157.50	92.6	115.0	0.28	0.99	92.6	0.28	0.95	0.99	30.00	1.00

APPENDIX D--RESPONSE TO COMMENTS

The following comments were received during the Public Notice of Draft Permit held for NPDES permit WA0020915. The public notice lasted from September 26, 2005, through October 25, 2005. The response to each substantive comment and changes in the final permit, if any, are presented in this section.

Comments from Frank Meriwether, Department of Health, Shellfish Program

Comment No. 1:

> The diagram for the WWTP on Page 4 of the Fact Sheet shows two sources of input into the lagoon. I believe there is also a diversion into the lagoon before the influent reaches the headworks (operated by manually turning a valve). Also, there are no arrows showing the routes where water or wastewater is directed back into the WWTP from the lagoon.

Response 1:

> It is true that the influent can be diverted to the lagoon bypassing the headworks. Also, the lagoon water can be directed to the WWTP at three locations (in the oxidation ditch, before the secondary clarifier, and before the chlorinator). However, Figure 3 on page 4 of the fact sheet only shows the usual treatment process scheme on a regular basis. It does not include all the details of the valves and connections. Detail process diagram can be found in the engineering drawings of the WWTP. **No changes were made in the permit due to this comment.**

Comment No. 2:

> Table S2 in the draft permit shows a minimum sampling frequency of twice per week for fecal coliforms. However the permit writer's manual indicates a minimum sampling frequency of three times per week for a plant of this size.

Response 2:

> The Department can reduce monitoring frequency during permit renewal for demonstrated good performance. The monitoring requirements for the conventional pollutants including Fecal Coliform was reduced to 2/week instead of the recommended 3/week in the previous permit cycle based on the good performance by the Permittee. Due to continued good performance, the level of monitoring has not been changed. In the event of permit violations or process change, monitoring can be increased. It has also been discussed in the page 16 of the fact sheet. **No changes were made in the permit due to this comment.**

Comments from Brian Shay, City Administrator, City of Hoquiam

Comment No. 1:

> On behalf of the City of Hoquiam, I request that the requirement to install an influent flow meter by October 1, 2006, be eliminated from our permit or at a minimum be given a three-year extension. This new requirement is item "a" on page 7 of the permit. The City of Hoquiam has met with our consulting engineer who has determined this project will cost the City a minimum of $50,000 to purchase a 24 inch mag meter and an in ground vault. I request the extension because

the City hopes to conduct a facility plan to identify all facility needs at the treatment plant before making any major expenditures or capital improvements. The City has also been mandated to install a de-chlorination system by November 1, 2006 in our current NPDES permit, however we have no facility plan indicating what our long term plans are for the facility. That project alone will cost the City $400,000 which is currently under the design phase.

Response 1:

Influent flow monitoring has been introduced in the permit so that it can be determined how much influent raw wastewater is diverted in the lagoon. During periods of rainfall and when the pump station kicks in, the headworks can not handle all the influent wastewater and a portion is diverted to the lagoon. The treatment plant is designed to treat 4 MGD and this loading criteria is in the special condition S.4.A of the City's NPDES permit. It is, therefore, necessary to measure the influent flow since the effluent parshall flume does not represent the actual flow coming into the plant. Hence, the Department denies the City's request for removing the requirement for influent flow measurement from the permit. However, the Department decided to delay the influent flow monitoring by one year from October 1, 2006, to October 1, 2007, based on the fact that the City plans to conduct a facility plan identifying the needs in their sewage collection and treatment system. The primary goal would be maximize treatment so that raw sewage does not bypass to the lagoon.

The Department changed the commencement date of influent flow monitoring from October 1, 2006, to October 1, 2007, in the permit.

Comment No. 2:

I request that the City be provided the statute or legal obligation to measure the influent flow and de-chlorinate our wastewater.

Response 2:

The total residual chlorine limit is a water quality-based limit necessary to protect aquatic organisms from the toxic effects of chlorine outside of the effluent mixing zone. The State has adopted water quality criteria for chlorine in WAC 173-201A-240. To clarify, the Department has not instructed the City to dechlorinate their wastewater. Rather, it imposed a chlorine limit to protect aquatic organisms. Apparently, the City has determined that the best way to meet that limit is through installation of dechlorination rather than use of more advanced chlorine dosing methods or use of UV disinfection. Regarding influent flow measurement, Chapter 173-220-210 WAC requires any discharge authorized by a permit subject to flow monitoring. **No changes were made in the permit due to this comment.**